REMARKS

Claims 1-6, all the claims pending in the application, stand rejected. Claims 1, 3 and 4 are amended. Claim 2 is cancelled.

Claim Rejections - 35 U.S.C. § 102

Claims 1-6 are rejected under 35 U.S.C. § 102(b) as being anticipated by Wegner (6,082,158). This rejection is traversed for at least the following reasons.

The present invention, according to a preferred embodiment illustrated in Fig. 1, concerns an actuator for a vehicle, particularly one used for a door locking device. The actuator 10 substantially comprises a driving motor 11 having a worm gear, a worm wheel 12 and an output lever 13 that is coupled to the wheel 12. The worm gear interacts with an engaging unit, having a groove 30, which is formed on worm wheel 12 causing the wheel to rotate. The worm wheel 12 includes on an axial face thereof a first sliding member 31, a second sliding member 32, a contact member 33, a guiding member 34 and an allowing member 35. A protrusion 20 at the tip end of lever 13 is adapted to engage the side surface of the worm wheel such that, as the worm wheel turns, the first sliding member 31, and the second sliding member 32 come in contact with the protrusion 20 and guide the protrusion to the guiding member 34 and allowing member 35, respectively.

The contact member 33, which has arms 331, 332 that extend in different directions with respect to the shaft 121, also engages the protrusion 20. As the wheel 12 turns clockwise, the guiding member 34 guides the protrusion 20 as it slides from the first sliding member 31 into contact with member 331. Similarly, when the wheel turns counterclockwise, the guiding member 34 guides the protrusion 20 into contact with the second contact member 332.

The allowing member 35 has an arc track R and has the tip of output lever 131 in its center. The allowing member 35 allows the movement of the protrusion 20 of the output lever when the lever 13 slides between the first position and the second position at a time when the worm wheel 12 is not turning. In other words, the structure of allowing member 35 does not

block, but permits, movement of locking lever 14 between a first position (unlocked) and a second position (locked) without engaging the motor. A manual operation of the device such that the locking lever moves between a first position and second position is described with regard to the figures at pages 10-13. Notably, the sliding of the protrusion is not transmitted to the worm wheel 12.

This arrangement obviates the need for an elastic body or spring for returning the worm wheel to a neutral position and permits an output lever 13 with a width that does not exceed the size of the protrusion 20, as explained at pages 14 and 15.

Claim 1 defines an actuator having a rotor 12, lever 13, engagement mechanism 31-35 and protrusion 20, and specifies the use of a guide mechanism that allows, when the rotor stops rotating, a movement of the lever without turning the rotor. This structure clearly relates to allowing member 35 having an arc track R. Claim 1 has been amended to incorporate limitations from claim 2 and to add further limitations related to the operation of the protrusion. In particular, claim 1 now specifies the content of the guide mechanism and defines the use of an "allowing portion" that allows, when the rotor stops rotating, the movement of the protrusion without turning the rotor. Further, claim 1 now specifies that the protrusion always stops at the allowing portion regardless of the whether the lever is at the first position or the second position.

Dependent claims 3-5, which now depend from claim 1 directly or indirectly, further define the slide guide portions and contact portions. Dependent claim 6 specifies the features of a locking lever.

Wegner

The Examiner looks to Wegner for teaching of the claimed invention, particularly with regard to the structure of Fig. 13. There, a motor 27 turns worm 29, which engages a worm wheel having at least one rotor 30 and a lever 38 having at one end a tracking pin 37. The rotor has internal elevated structure 32 with protrusions that are defined between the wheel shaft 35 and an outer elevated portion 33 on one axial side of the worm wheel 30. An indented

intermediate region 34, formed between the inner elevated portion 32 and the outer elevated portion 33, corresponds to a groove for receiving a pin 37 on lever 38. The pin 37 extends into the groove 34 and can rest on the contours of the inner elevations 32 and outer elevations 33 (col. 5, lines 40-61).

Notably, there is no explanation with regard to the operation of the device and, in particular, the positions of the pin 37 as the worm wheel 30 rotates and causes the lever 38 to be moved about axis 39. Moreover, there is no teaching with regard to an ability to move the lever without turning the rotor. For example, at column 5, lines 49-51, Wegner states that the contour is for establishing different functions of the lock "as will be described later on." However, there is no subsequent description. Even as to the illustration in Fig. 13, in which the Examiner has identified contours of the inner and outer elevations 32, 33 as corresponding to the claimed structures, Applicants respectfully submit that Wegner clearly is deficient in failing to provide an adequate description.

More importantly, even if the Examiner succeeds in asserting that the illustration in Fig. 13 is adequate, it is clear that Wegner does not teach or suggest the limitations now added to claim 1. Wegner discloses that the cam shaft 16 is moved by the movement of the first lever 38 and second lever 36. Positions of the lever 13 and 14 with respect to the pawl 1 are changed by stopping the shaft cam 16 at different positions shown in Figs. 6 to 9. By contrast, in the case of the present invention, the protrusion 20 is stopped by contacting the protrusion 20 with the allowing member 35.

In the case of Wegner, even if the pin 37 is configured to stop at each of several curved waiting positions on the cam surfaces of inner elevation 32 and outer elevation 33 in Fig. 13 of Wegner, the structure is clearly more complicated that the present invention. Specifically, production of the cam surfaces on inner elevations 32 and outer elevations 33 and their accurate assembly would incur higher production cost. In addition, the control unit for making the pin 37 stop at each of the waiting positions becomes complicated and costly.

Furthermore, in the case of Wegner, when the pin 37 is positioned at any of the waiting positions on the cam surfaces of elevations 32 and 33, the pin 37 is required to move between the

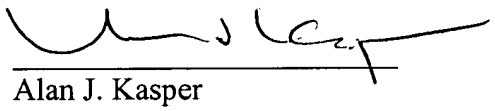
inner elevations 32 and the outer elevations 33, which also allows the first lever 38 and the second lever 36 to move. As a result, contacting positions of the pin 37 with the inner elevations 32 can be displaced from the normal position. If this occurs the pin 37 pushes and rotates the contoured disk 30.

By contrast, in the case of the present invention, the protrusion 20 always stops at the allowing member 35, thereby making the shape of the groove simple and reducing the production cost of the rotor. In the case of the present invention, even if the protrusion 20 stops at a displaced position on the allowing member 35, it is easy to return the protrusion 20 to the normal position by manually moving the output lever 13. Thus, the inclusion of this feature in claim 1 clearly distinguishes the invention over the cited art.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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